

TECHNICAL REVIEW DOCUMENT
for
Minor Modification
of
OPERATING PERMIT 95OPPB025
to be issued to:

WestPlains Energy (Division of UtiliCorp United)
Pueblo Power Plant
Pueblo County
Source ID 1010008

Michael E. Jensen
March 13, 2001

I. PURPOSE:

This document will establish the basis for decisions made regarding the Applicable Requirements, Emission Factors, Monitoring Plan and Compliance Status of Emission Units covered within the Operating Permit proposed for this site. It is designed for reference during review of the proposed permit by the EPA, the public and other interested parties. The conclusions based on this report are based on information provided in the permit modification application submitted on November 27, 2000. This narrative is intended only as an adjunct for the reviewer and has no legal standing.

On April 16, 1998 the Colorado Air Quality Control Commission directed the Division to implement new procedures regarding the use of short term emission and production/throughput limits on Construction permits. These procedures are being directly implemented in all operating permits that had not started their Public Comment period as of April 16, 1998. All short term emission and production/throughput limits that appeared in the construction permits associated with this facility that are not required by a specific State or Federal standard or by the above referenced Division procedures have been deleted and all annual emission and production/throughput limits converted to a rolling 12 month total. Note that, If applicable, appropriate modeling to demonstrate compliance with the National Ambient Air Quality Standards was conducted as part of the Construction Permit processing procedures. If required by this permit, portable monitoring results and/or EPA reference test method results will be multiplied by 8760 hours for comparison to annual emission limits unless there is a specific condition in the permit restricting hours of operation.

Any revisions made to the underlying construction permits associated with this facility made in conjunction with the processing of this operating permit application have been reviewed in accordance with the requirements of Regulation No. 3, Part B, Construction Permits, and have been found to meet all applicable substantive and procedural requirements. This operating permit incorporates and shall be considered to be a combined construction/operating permit for any such revision, and the permittee shall be allowed to

operate under the revised conditions upon issuance of this operating permit without applying for a revision to this permit or for an additional or revised Construction Permit.

II. SOURCE DESCRIPTION:

This facility is located in Pueblo, Colorado. Pueblo is classified as an attainment area for all criteria pollutants. There are no affected states within 50 miles of the facility. The Great Sand Dunes National Park is a designated Federal Class I area within 100 kilometers of the facility. Florissant Fossil Beds is a Federal land area within 100 kilometers of the facility. Florissant Fossil Beds has been designated by the State to have the same sulfur dioxide increment as Federal Class I areas.

There have been several steam driven generating units at the facility since the early 1920s. Unit #1922 (boiler #1, #2 and #3, and turbine #4) was converted from coal burning in the 1960s. The unit was permanently removed from service about January 1, 1990. Unit #1941 (boiler #4 and turbine #5) was permanently removed from service on December 14, 1994. The permit modification being requested is to provide a new 134.7 MMBtu per hour boiler to replace Unit #1941 boiler which had been disabled and was no longer usable. The new boiler will use the existing turbine and facility components.

The following Potential-to-Emit tabulation of emissions has been revised to reflect the new boiler:

POLLUTANT	POTENTIAL TO EMIT, TPY			TOTAL PTE, TPY	1999 ACTUAL EMISSIONS, TPY
	246 MMBtu/Hr BOILER		134.7 MMBtu/Hr BOILER		
	NG	#2 FO	NG		
PM	3.57	14.77	4.8	112.98	132.6
PM ₁₀	3.57	7.39	4.8	107.93	120.1
SO _x	0.71	1060.63	0.4	105.23	1166.2
NO _x	654.78	177.26	18.1	1581.75	2254.6
VOC	1.67	1.48	3.4	108.26	113.3
CO	47.62	36.93	45.1	344.01	436.7

NG = natural gas #2 FO = #2 Distillate

III. EMISSION SOURCES

The requested Operating Permit modification was performed to establish the permit requirements for the following source:

**Unit B002 – 134.7 MMBtu/Hr ABCO Industries, Inc Type D, Natural Gas Fired.
SN SO200003**

1. Applicable Requirements – The estimated emissions are greater than the Construction Permit threshold under the Colorado Regulations. WestPlains requested the permit terms and conditions for the new boiler be established as a combined Construction Permit and modification of Title V Operating Permit 95OPPB025.

The facility is located in an attainment area and is classified as a major source for the Prevention of Significance Deterioration (PSD) provisions. The estimated emissions at the design capacity of 134.7 MMBtu per hour for the new boiler did not exceed the PSD pollutant significance levels requiring PSD review. The requested permit limit for carbon monoxide level did not require Public Notice of the issuance of the Construction Permit. The requested permit limits are slightly greater than the estimated emissions, except for nitrogen oxides and carbon monoxide, to allow some cushion for the accuracy of the estimated emissions.

Colorado Regulation No. 6 uses the following equation to establish a particulate emissions limit:

$$PE = 0.5(FI)^{-0.26}$$

PE = Particulate Emissions in pounds per million BTU heat input
FI = Fuel Input in Million BTU (MMBTU) per hour (Hr)

The standard set for the boiler by this equation is 0.14 pounds of particulate per MMBtu. A calculation using the AP-42 emission factor (6.3 pounds per million standard cubic feet) and the natural gas heat content (850 Btu per standard cubic foot) results in a value of 0.0074 pounds per million Btu, which demonstrates the design capacity of the boiler prevents the emissions from exceeding the standard when burning pipeline quality natural gas.

The boiler is subject to the New Source Performance Standards (NSPS) Subpart Db -“Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units”. Subpart Db does not provide any standards for sulfur dioxide or particulate emissions for units burning only natural gas. Section 60.44b(1)(2) of Subpart Db sets a nitrogen oxides emission standard of 0.10 lb/MMBtu for the boiler.

The opacity compliance standard is set not to exceed 20% by Regulation No. 1 §II.A.1, except for periods of building of a new fire, startup, or any process modification. During such periods the opacity of emissions is not to exceed 30% as set by Regulation No. 1 §II.A.4. Regulation No. 6, §II.C.3 sets a State-Only requirement for the opacity standard not to exceed 20%.

The unit is exempt from the Title IV Acid Rain provisions because the electrical generation output of 9 MW is less than the 25 MW exemption threshold of Title IV.

2. Emission Factors - Emissions from the boiler result from burning natural gas. The primary criteria pollutants of concern are nitrogen oxides (NO_x) and sulfur oxides (SO₂). WestPlains requested to use standard emission factors from the EPA AP-42 manual for all the criteria pollutants except the nitrogen oxides and carbon monoxide. The boiler manufacturer provided emission factors for the carbon monoxide and nitrogen oxides. The carbon monoxide emission factor was nearly double the AP-42 factor; while the nitrogen oxide emission factor was less than half the AP-42 factor. The Division accepts emission factors greater than AP-42 without the requirement for demonstrating compliance. However, for emission factors less than AP-42, as is the case for the nitrogen oxide emissions, a compliance test is required.

3. Monitoring Plan – The Division does not believe that the firing of natural gas should result in opacity compliance problems. On that basis, the Division accepts the restriction to firing only natural gas demonstrates compliance with the opacity standard, unless there is any credible evidence to demonstrate that is not the case. The Method 9 opacity monitoring provisions are provided in the unlikely event an opacity compliance issue arises.

The NSPS provisions allow compliance with the nitrogen oxides pounds per million Btu standard to be demonstrated by use of a continuous monitoring system (CEMS) (§60.48b(b)(1)) or a predictive emissions monitoring system (PEMS) method based on defined operating conditions. (§60.48b(g)(2)) UtiliCorp has used predictive methods at another plant they operate and requested this alternative be available for use for this boiler. The NSPS provisions provide the Division with the authority to review, accept and approve the use of a PEMS in lieu of a CEMS. In the event the Division does not accept and approve the use of a PEMS, the CEMS shall be required. One approved monitoring system must be in place within 360 days of the initial startup of the boiler.

Section 60.49b(d) requires the amount of fuel combusted to be monitored on a daily basis and to calculate the annual capacity factor on a 12-month rolling average basis. While the annual capacity factor does not play a significant role for this boiler, the provisions require it to be monitored.

Compliance with the limits for the other criteria pollutants is determined by calculation of the emissions based on the fuel use. Since the emission factors and the fuel usage is based on the heat content of the natural gas, the heat content is to be monitored. EPA is paying increasing attention to the sulfur content of the natural gas being burned. Since the natural gas sulfur content is monitored for the 246 MMBtu per hour boiler, that same requirement for the new boiler does not require any additional resources.

4. Compliance Status – The permit requires that compliance with the permit requirements for carbon monoxide and nitrogen oxides be demonstrated within 180 days of the new boiler being placed in service.

The nitrogen oxides emission factor used for the annual compliance determination is lower than the value provided by the EPA AP-42 manual. Division policy requires a demonstration of compliance for factors less than those provided in AP-42. Because of the relationship of carbon monoxide and nitrogen oxides during combustion, compliance with the carbon monoxide annual limit is to be demonstrated also.

The performance test to demonstrate compliance with the pounds per million Btu NSPS standard requires the nitrogen oxides emissions to be monitored with a continuous emissions monitoring system for 30 successive steam generating unit operating days. WestPlains noted they had received approval to use the predictive emissions monitoring system (PEMS) for the compliance performance test at other plants they operate outside of Colorado. The NSPS provisions require the use of an alternative compliance performance test, such as the PEMS, to be submitted to EPA for approval. WestPlains must be mindful that the deadlines for conducting the compliance performance tests make no provision for any delays created by seeking EPA approval for the use of the alternative test.

After the initial performance test has been completed, the Division or EPA may request compliance with the standard be demonstrated through the use of the 30-day performance test. The NSPS provisions allow a year (360 days) for the preparation of the predictive emissions monitoring system identifying the operating conditions to be monitored and the method or procedure to be used to predict the emissions of nitrogen oxides. The time frames for this provision do not provide for the development and verification of the predictive method during the initial performance test, but does not preclude such activity. The Division considered the need for a performance test to demonstrate the validity of the prediction plan before the plan was approved. After considering the cost for the additional testing and the amount of emissions involved, the Division elected to accomplish the validation prior to the expiration of the permit in the event changes were necessary before the permit was renewed. Nothing prevents WestPlains from performing the test and including the information in the plan submitted for Division approval.